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# Determining the Effects of Training in Naval Virtual Environments

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# Determining the Effects of Training in Virtual Environments

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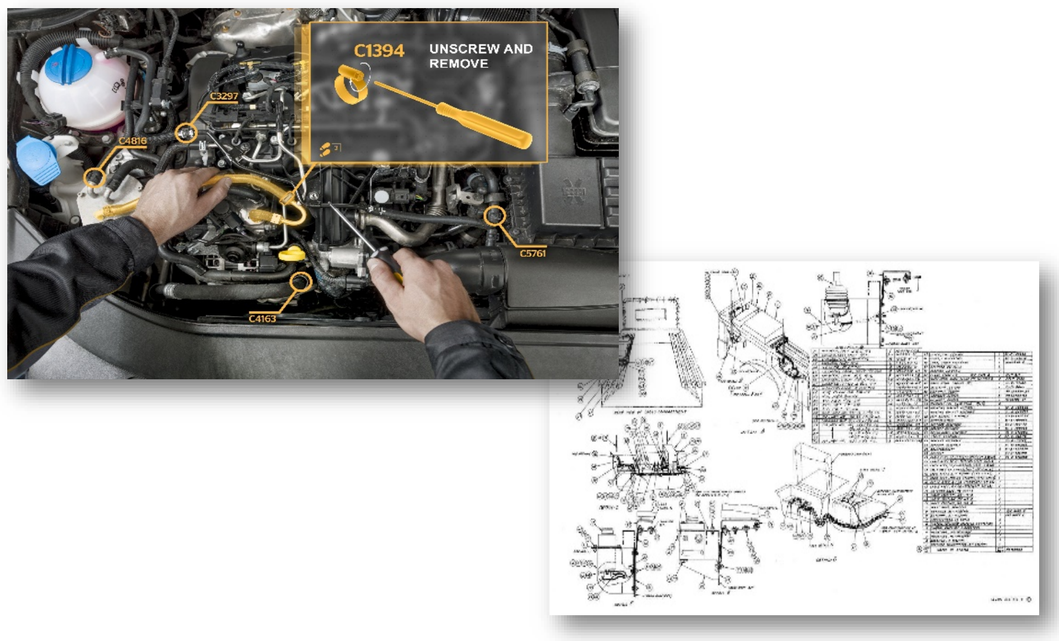
## Background

The Navy desires to improve its maintenance processes. A maintenance and material management (3M) summit in June 2015, headed by VADM Rowden, brought East and West coast maintainers together to hear user level fleet maintainer ideas and opinions. Within the field of maintenance, there are many new technologies, however this has not transferred over to the training domain.




*Which training method is more effective?*

*Example of the AR condition*

## Study Purpose

The purpose of this experiment is to determine if using new technology, specifically AR, aids training and execution of basic maintenance tasks more so than traditional methodology. We hypothesized that participants who receive VE/AR training would make fewer errors and complete an assembly task more quickly than participants receiving traditional training.

## Experiment

Thirty-four Marine maintenance personnel participated in the study: 17 first completed the assembly task with traditional training (Traditional condition) and then completed the task with AR training (AR condition); the other 17 completed the tasks in the reverse order (ie, AR then traditional).

## Results

- Results supported the hypotheses. Paired *t*-test indicated that time to complete the assembly task was significantly shorter in the AR condition than the traditional condition (Mean difference: 87.21 sec, $t(30) = 2.26$, $p = .03$, 95% CI: -166.15 sec to -8.26 sec).
- Participants also made significantly fewer errors with the AR condition than traditional condition (mean difference = 25.53mm; 95% CI: .01mm to .029mm, $z = 5.64$, $p < .0001$). Results have implications for training of tasks that require hands-on assembly.

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